: 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XB222]

Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to Geophysical Surveys Related to Oil and Gas Activities in the Gulf of Mexico

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of issuance of Letter of Authorization.

SUMMARY: In accordance with the Marine Mammal Protection Act (MMPA), as amended, its implementing regulations, and NMFS' MMPA Regulations for Taking Marine Mammals Incidental to Geophysical Surveys Related to Oil and Gas Activities in the Gulf of Mexico, notification is hereby given that a Letter of Authorization (LOA) has been issued to Shell Offshore Inc. (Shell) for the take of marine mammals incidental to geophysical survey activity in the Gulf of Mexico.

DATES: The LOA is effective from July 15, 2021, through August 15, 2021.

ADDRESSES: The LOA, LOA request, and supporting documentation are available online at: *www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico*. In case of problems accessing these documents, please call the contact listed below (see **FOR FURTHER INFORMATION CONTACT**).

FOR FURTHER INFORMATION CONTACT: Ben Laws, Office of Protected Resources, NMFS, (301) 427-8401.

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq*.) direct the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

An authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth. NMFS has defined "negligible impact" in 50 CFR 216.103 as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.

Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

On January 19, 2021, we issued a final rule with regulations to govern the unintentional taking of marine mammals incidental to geophysical survey activities conducted by oil and gas industry operators, and those persons authorized to conduct activities on their behalf (collectively "industry operators"), in Federal waters of the U.S. Gulf of Mexico (GOM) over the course of 5 years (86 FR 5322; January 19, 2021). The

rule was based on our findings that the total taking from the specified activities over the 5-year period will have a negligible impact on the affected species or stock(s) of marine mammals and will not have an unmitigable adverse impact on the availability of those species or stocks for subsistence uses. The rule became effective on April 19, 2021.

Our regulations at 50 CFR 217.180 *et seq*. allow for the issuance of LOAs to industry operators for the incidental take of marine mammals during geophysical survey activities and prescribe the permissible methods of taking and other means of effecting the least practicable adverse impact on marine mammal species or stocks and their habitat (often referred to as mitigation), as well as requirements pertaining to the monitoring and reporting of such taking. Under 50 CFR 217.186(e), issuance of an LOA shall be based on a determination that the level of taking will be consistent with the findings made for the total taking allowable under these regulations and a determination that the amount of take authorized under the LOA is of no more than small numbers.

Summary of Request and Analysis

Shell plans to conduct sea trials of an alternative sound source known as the Low Impact Seismic Source-Tuned Pulse Source (LISS-TPS). These trials will be conducted using only the LISS-TPS sound source, covering portions of approximately 45 lease blocks centered around Lease Block AC 690 in Shell's Leopard development area. Please see Shell's application for additional detail.

The LISS-TPS source was not included in the acoustic exposure modeling developed in support of the rule. However, our rule anticipated the possibility of new and unusual technologies (NUT) and determined they would be evaluated on a case-by case basis (86 FR 5322, 5442; January 19, 2021).

The LISS-TPS source operates on the same basic principles as a traditional airgun source in that it uses compressed air to create a bubble in the water column which then goes through a series of collapses and expansions creating primarily low-frequency

sounds. The difference between the two sources is that the LISS-TPS source releases a larger volume of air (the LISS-TPS source has a volume of 26,500 in^3, whereas the standard airgun array used in the acoustic exposure modeling supporting the rule has a total volume of 8,000 in^3), but at lower pressure (the LISS-TPS source operates at 1,000 pounds per square inch (psi), whereas traditional airguns are typically operated at 2,000 psi). This creates a larger bubble resulting in more of the energy being concentrated in low-frequencies. The release of the air is also "tuned" so that the primary signal has an extended rise time and lower peak pressure level than that of a traditional airgun array source.

The LISS-TPS source produces more sound at lower frequencies (approximately 3-7 Hz) compared to an airgun source, while producing much less sound (lower decibel levels) at frequencies above 7 Hz, meaning that the source produces significantly reduced energy at frequencies used by marine mammals for hearing and communication. This means that even for species in the low-frequency hearing group (mysticete whales) most affected by seismic survey sounds, the LISS-TPS source is expected to have less impact than a traditional airgun array in terms of overlap with frequencies the species use. Potential impacts on mid- and high-frequency hearing groups will be reduced even more.

Besides producing less energy in frequencies used by marine mammals, the LISS-TPS source produces sounds with overall lower energy at the source. Test data for the actual source planned for use in these trials were obtained at a quarry, showing that the LISS-TPS source produces significantly less output than a traditional airgun array at all frequencies above 5 Hz. For example, the LISS-TPS source level (at the typical reference distance of 1 m) has a peak sound pressure level (SPL_{peak}) of 236 dB and a single-shot sound exposure level (SEL) of 220 dB. These measured levels are 19 dB and 12 dB less than the modeled SPL_{peak} and SEL source levels, respectively, for the 8,000-in^3 airgun array used in the acoustic exposure modeling (source level = 255 dB SPL_{peak}; 232 dB

SEL). For every 6-dB reduction in source level, the approximate distance to the same threshold level would be cut in half, meaning that there would be more than an 8-fold reduction in distance to SPL_{peak} thresholds. There would also be a significant reduction in the likelihood that auditory injury could result from the accumulation of energy (which is expected to dictate occurrence of injury for low-frequency cetaceans, though they are not expected to occur in the area of this planned survey). The much lower peak sound pressure levels near the source and extended rise time reduce the potential for auditory injury (Level A harassment) for all marine mammal species, since these are the two main physical characteristics of impulsive sounds that are considered most injurious.

The LISS-TPS source produces a 33 dB lower root-mean-square SPL (SPL_{rms}), compared with estimates for a commonly used 5,110-in^3 airgun array. Thus, a reduction in the source level of 33 dB would result in distances to SPL_{rms} Level B harassment thresholds being less than 1/32 of the airgun array. These factors lead to a conclusion that take by Level B harassment associated with use of the LISS-TPS source would be less than would occur for a similar survey instead using the modeled airgun array as a sound source, and that use of the LISS-TPS source results in lower potential for the occurrence of Level A harassment than does use of the modeled airgun array. Based on the foregoing, we have determined there will be no effects of a magnitude or intensity different from those evaluated in support of the rule. Moreover, use of modeling results relating to use of the 72 element, 8,000 in^3 airgun array are expected to be significantly conservative as a proxy for use in evaluating potential impacts of use of the LISS-TPS source.

(We also note that for this LISS-TPS source, BOEM determined that Endangered Species Act (ESA) section 7 step-down review of the LISS-TPS source was required under NMFS' 2020 Biological Opinion on the Federally Regulated Oil and Gas Program Activities in the Gulf of Mexico. This step-down review was conducted in association

with modification of BOEM's Permit L20-012. NMFS' ESA Interagency Consultation Division requested and received an analysis from BOEM that considered the effects associated with the LISS-TPS source. As a result of this review, NMFS determined that use of the source is unlikely to result in additional effects beyond those previously considered in the 2020 Biological Opinion.)

Consistent with the preamble to the final rule, the survey effort proposed by Shell in its LOA request was used to develop LOA-specific take estimates based on the acoustic exposure modeling results described in the preamble (86 FR 5322, 5398; January 19, 2021). In order to generate the appropriate take number for authorization, the following information was considered: (1) survey type; (2) location (by modeling zone[1]); (3) number of days; and (4) season.[2] The acoustic exposure modeling performed in support of the rule provides 24-hour exposure estimates for each species, specific to each modeled survey type in each zone and season.

3D NAZ was used as the most suitable proxy for survey type based on the survey design and similarities to the general 3D NAZ survey geometry. Although this planned survey would only use a single source vessel, compared with the two source vessels assumed in modeling 3D NAZ surveys, the planned line spacing is most comparable to 3D NAZ. Please see summary descriptions of modeled survey geometries in the preamble to the proposed rule (83 FR 29212, 29220; June 22, 2018). Take numbers authorized through the LOA are considered very conservative due to differences in both the sound source and the survey geometry planned by Shell, as compared to those modeled for the rule.

[1] For purposes of acoustic exposure modeling, the GOM was divided into seven zones. Zone 1 is not included in the geographic scope of the rule.
[2] For purposes of acoustic exposure modeling, seasons include Winter (December-March) and Summer (April-November).

The survey is planned to occur for 20 days, with 8 days occurring in Zone 6 and 12 days in Zone 7. The season is defined as summer. Note that Rice's (formerly Bryde's) whales[3] are assumed to not be present in Zone 6 (see 83 FR 29212, 29253; June 22, 2018), and no take of Rice's whale is authorized through this LOA. Note that use of the modeling results indicates that no take of Rice's whale would occur in Zone 7.

For some species, take estimates based solely on the modeling yielded results that are not realistically likely to occur when considered in light of other relevant information available during the rulemaking process regarding marine mammal occurrence in the GOM. Thus, although the modeling conducted for the rule is a natural starting point for estimating take, our rule acknowledged that other information could be considered (see, *e.g.*, 86 FR 5322, 5442 (January 19, 2021), discussing the need to provide flexibility and make efficient use of previous public and agency review of other information and identifying that additional public review is not necessary unless the model or inputs used differ substantively from those that were previously reviewed by NMFS and the public). For this survey, NMFS has other relevant information reviewed during the rulemaking that indicates use of the acoustic exposure modeling to generate a take estimate for certain marine mammal species produces results inconsistent with what is known regarding their occurrence in the GOM. Accordingly, we have adjusted the calculated take estimates as described below.

Killer whales are the most rarely encountered species in the GOM, typically in deep waters of the central GOM (Roberts *et al*., 2015; Maze-Foley and Mullin, 2006). The approach used in the acoustic exposure modeling, in which seven modeling zones were defined over the U.S. GOM, necessarily averages fine-scale information about marine mammal distribution over the large area of each modeling zone. NMFS has

[3] The final rule refers to the GOM Bryde's whale (*Balaenoptera edeni*). These whales were subsequently described as a new species, Rice's whale (*Balaenoptera ricei*) (Rosel *et al*., 2021).

determined that the approach results in unrealistic projections regarding the likelihood of encountering killer whales.

As discussed in the final rule, the density models produced by Roberts *et al*. (2016) provide the best available scientific information regarding predicted density patterns of cetaceans in the U.S. GOM. The predictions represent the output of models derived from multi-year observations and associated environmental parameters that incorporate corrections for detection bias. However, in the case of killer whales, the model is informed by few data, as indicated by the coefficient of variation associated with the abundance predicted by the model (0.41, the second-highest of any GOM species model; Roberts *et al*., 2016). The model's authors noted the expected non-uniform distribution of this rarely-encountered species (as discussed above) and expressed that, due to the limited data available to inform the model, it "should be viewed cautiously" (Roberts *et al*., 2015).

NOAA surveys in the GOM from 1992-2009 reported only 16 sightings of killer whales, with an additional three encounters during more recent survey effort from 2017-18 (Waring *et al*., 2013; *www.boem.gov/gommapps*). Two other species were also observed on less than 20 occasions during the 1992-2009 NOAA surveys (Fraser's dolphin and false killer whale[4]). However, observational data collected by protected species observers (PSOs) on industry geophysical survey vessels from 2002-2015 distinguish the killer whale in terms of rarity. During this period, killer whales were encountered on only 10 occasions, whereas the next most rarely encountered species (Fraser's dolphin) was recorded on 69 occasions (Barkaszi and Kelly, 2019). The false killer whale and pygmy killer whale were the next most rarely encountered species, with 110 records each. The killer whale was the species with the lowest detection frequency

[4] However, note that these species have been observed over a greater range of water depths in the GOM than have killer whales.

during each period over which PSO data were synthesized (2002-2008 and 2009-2015). This information qualitatively informed our rulemaking process, as discussed at 86 FR 5322, 5334 (January 19, 2021), and similarly informs our analysis here.

The rarity of encounter during seismic surveys is not likely to be the product of high bias on the probability of detection. Unlike certain cryptic species with high detection bias, such as *Kogia* spp. or beaked whales, or deep-diving species with high availability bias, such as beaked whales or sperm whales, killer whales are typically available for detection when present and are easily observed. Roberts *et al*. (2015) stated that availability is not a major factor affecting detectability of killer whales from shipboard surveys, as they are not a particularly long-diving species. Baird *et al*. (2005) reported that mean dive durations for 41 fish-eating killer whales for dives greater than or equal to 1 minute in duration was 2.3-2.4 minutes, and Hooker *et al*. (2012) reported that killer whales spent 78 percent of their time at depths between 0-10 m. Similarly, Kvadsheim *et al*. (2012) reported data from a study of four killer whales, noting that the whales performed 20 times as many dives to 1-30 m depth than to deeper waters, with an average depth during those most common dives of approximately 3 m.

In summary, killer whales are the most rarely encountered species in the GOM and typically occur only in particularly deep water. While this information is reflected through the density model informing the acoustic exposure modeling results, there is relatively high uncertainty associated with the model for this species, and the acoustic exposure modeling applies mean distribution data over areas where the species is in fact less likely to occur. NMFS' determination in reflection of the data discussed above, which informed the final rule, is that use of the generic acoustic exposure modeling results for killer whales would result in high estimated take numbers that are inconsistent with the assumptions made in the rule regarding expected killer whale take (86 FR 5322, 5403; January 19, 2021).

In past authorizations, NMFS has often addressed situations involving the low likelihood of encountering a rare species such as killer whales in the GOM through authorization of take of a single group of average size (*i.e.*, representing a single potential encounter). See 83 FR 63268, December 7, 2018. See also 86 FR 29090, May 28, 2021; 85 FR 55645, September 9, 2020. For the reasons expressed above, NMFS determined that a single encounter of killer whales is more likely than the model-generated estimates and has authorized take associated with a single killer whale group encounter (*i.e.*, up to 7 animals).

Based on the results of our analysis, NMFS has determined that the level of taking authorized through the LOA is consistent with the findings made for the total taking allowable under the regulations. See Table 1 in this notice and Table 9 of the rule (86 FR 5322; January 19, 2021).

Small Numbers Determination

Under the GOM rule, NMFS may not authorize incidental take of marine mammals in an LOA if it will exceed "small numbers." In short, when an acceptable estimate of the individual marine mammals taken is available, if the estimated number of individual animals taken is up to, but not greater than, one-third of the best available abundance estimate, NMFS will determine that the numbers of marine mammals taken of a species or stock are small. For more information please see NMFS' discussion of the MMPA's small numbers requirement provided in the final rule (86 FR 5322, 5438; January 19, 2021).

The take numbers for authorization are determined as described above. Subsequently, the total incidents of harassment for each species are multiplied by scalar ratios to produce a derived product that better reflects the number of individuals likely to be taken within a survey (as compared to the total number of instances of take), accounting for the likelihood that some individual marine mammals may be taken on

more than one day (see 86 FR 5322, 5404; January 19, 2021). The output of this scaling, where appropriate, is incorporated into an adjusted total take estimate that is the basis for NMFS' small numbers determination, as depicted in Table 1 for Shell's 20-day survey.

This product is used by NMFS in making the necessary small numbers determination, through comparison with the best available abundance estimates (see discussion at 86 FR 5322, 5391; January 19, 2021). For this comparison, NMFS' approach is to use the maximum theoretical population, determined through review of current stock abundance reports (SAR; *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and model-predicted abundance information (*https://seamap.env.duke.edu/models/Duke/GOM/*). For the latter, for taxa where a density surface model could be produced, we use the maximum mean seasonal (*i.e.*, three-month) abundance prediction for purposes of comparison as a precautionary smoothing of month-to-month fluctuations and in consideration of a corresponding lack of data in the literature regarding seasonal distribution of marine mammals in the GOM. Information supporting the small numbers determinations is provided in Table 1.

Table 1. Take Analysis

Species	Authorized take	Scaled take[1]	Abundance[2]	Percent abundance
Sperm whale	347	146.8	2,207	6.7
Kogia spp.	107[3]	33.1	4,373	0.8
Beaked whales	1,990	201.0	3,768	5.3
Rough-toothed dolphin	270	77.5	4,853	1.6
Bottlenose dolphin	511	146.7	176,108	0.1
Clymene dolphin	1,001	287.3	11,895	2.4
Atlantic spotted dolphin	213	61.1	74,785	0.1
Pantropical spotted dolphin	4,946	1,419.5	102,361	1.4
Spinner dolphin	152[4]	43.6	25,114	0.2
Striped dolphin	347	99.6	5,229	1.9
Fraser's dolphin	125	35.9	1,665	2.2
Risso's dolphin	180	53.1	3,764	1.4
Melon-headed whale	552	162.8	7,003	2.3
Pygmy killer whale	169	49.9	2,126	2.3
False killer whale	222	65.5	3,204	2.0
Killer whale	7	n/a	267	2.6
Short-finned pilot whale	216	63.7	1,981	3.2

[1]Scalar ratios were applied to "Authorized Take" values as described at 86 FR 5322, 5404 (January 19, 2021) to derive scaled take numbers shown here.
[2]Best abundance estimate. For most taxa, the best abundance estimate for purposes of comparison with take estimates is considered here to be the model-predicted abundance (Roberts *et al.*, 2016). For those taxa where a density surface model predicting abundance by month was produced, the maximum mean seasonal abundance was used. For those taxa where abundance is not predicted by month, only mean annual abundance is available. For the killer whale, the larger estimated SAR abundance estimate is used.
[3]Includes 4 takes by Level A harassment and 103 takes by Level B harassment. Scalar ratio is applied to takes by Level B harassment only; small numbers determination made on basis of scaled Level B harassment take plus authorized Level A harassment take.
[4]Estimated take of 117 increased based on assumed average group size of 152 (Maze-Foley and Mullin, 2006).

Based on the analysis contained herein of Shell's proposed survey activity described in its LOA application and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the affected species or stock sizes and therefore is of no more than small numbers.

Authorization

NMFS has determined that the level of taking for this LOA request is consistent with the findings made for the total taking allowable under the incidental take regulations and that the amount of take authorized under the LOA is of no more than small numbers. Accordingly, we have issued an LOA to Shell authorizing the take of marine mammals incidental to its geophysical survey activity, as described above.

Dated: July 12, 2021.

Catherine Marzin,

Acting Director, Office of Protected Resources,

National Marine Fisheries Service.

[FR Doc. 2021-15047 Filed: 7/14/2021 8:45 am; Publication Date: 7/15/2021]